Amendments to the Drawings:

The attached sheets of drawings include changes to FIG. 1. These sheets, which include FIG. 1, replace the original sheet including FIG. 1. In FIG. 1, text has been added to clarify that reference numeral 200 represents a charge/discharge restriction device, a remaining capacity detection device, a control value computation device, a capacity difference computation device, a storage device, an apparent state of charge value computation device, an apparent state of charge value adoption device.

Attachment: Replacement Sheet

                       Annotated Sheet Showing Changes

REMARKS

I. Status of Claims

Claims 22-39 are pending in the application. Claims 1-21 are/were canceled without prejudice to and/or disclaimer of the subject matter therein. Claims 22, 30, 38, and 39 are independent. Claims 22, 25, 27, 30, 33, and 35 are currently amended.

Claims 22, 25, 27, 30 and 33 stand objected to because of some minor informalities.

Claims 22-29 stand rejected under 35 USC 112, first paragraph as allegedly failing to comply with the written description requirement.

Claims 22-25, 30-33 and 38-39 stand rejected under 35 USC 102(b) as allegedly being anticipated by Kikuchi et al (EP 909001 A2) ("Kikuchi").

The Applicant respectfully requests reconsideration of these rejections in view of the foregoing amendments and the following remarks.

II. Drawings

The drawings are objected to under 37 CFR 1.83(a) because they must show every feature of the invention specified in the claims. The Applicant respectfully submits that, in amended FIG. 1, the previously omitted elements have been added.

III. Allowable Subject Matter

Claims 26-29 and 34-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

IV. Claim Objections

The Applicant respectfully submits that the claims are amended to correct any perceived ambiguity.

That being said, the Office Action alleges that the limitation "the predetermined capacity difference maximum value is adopted instead of the capacity difference" is indefinite. The Applicant respectfully directs the Examiner's attention to FIG. 2, where it can be seen in S12 it is determined that Qd (e.g., capacity difference) is greater than Ql (e.g., predetermined capacity

difference maximum value). As shown in S16, if Qd is greater than Q1, Qd is Q1; however, if Qd is not greater than Q1 (that is Qd is equal to or less than Q1), Qd=Qd (Qd≤Q1), as shown in S14. These explanations are described in [0036], lines 1-5, of the specification.

V.   35 USC 112, first paragraph, Rejection

Claim 22 is amended to correct any perceived ambiguity.

VI.   Pending Claims

Claims 22, 30, 38, and 39, the only independent claims, stand rejected under 35 USC 102(b) as allegedly being anticipated by Kikuchi.

The Applicant respectfully submits that claim 22 is patentable over Kikuchi at least because it recites, "…an apparent state-of-charge value adoption device for adopting the apparent state-of-charge value if the capacity difference is at least a predetermined capacity difference that is stored beforehand."

The Applicant respectfully submits that claim 30 is patentable over Kikuchi at least because it recites, "…the controller adopts the apparent state-of-charge value if the capacity difference is at least a predetermined capacity difference that is stored beforehand."

The Applicant respectfully submits that claim 38 is patentable over Kikuchi at least because it recites, "…adopting an apparent state-of-charge value if the capacity difference is at least a predetermined capacity difference that is stored beforehand."

The Applicant respectfully submits that claim 39 is patentable over Kikuchi at least because it recites, "…computing an apparent state-of-charge value that is different from the control state-of-charge value, with reference to a correlation between the capacity difference and the apparent state-of-charge value."

It is a fundamental problem that if a capacity variation between batteries to be charged becomes considerably great, the charging of the battery pack does not stop even if the battery pack is already charged. This is because a representative SOC no longer increases and thus a battery ECU is unable to determine that the battery pack is fully charged. In the event this happens, the charging of the battery pack does not stop but inconveniently continues, and, in some cases, if the charging continues, the engine cannot be stopped. Further, during running of

the vehicle, if it is determined that charging is incomplete despite accomplishment of a maximum charge, the engine power is consumed for the charging of the battery pack by a generator in addition to the driving of the vehicle by the vehicle-driving motor. Thus, there occurs a case where during the running of a vehicle that requires increased power, for example, an uphill run or the like, sufficient energy cannot be supplied for the driving of the vehicle, thus failing to meet a drivability requirement.

Kikuchi discloses a method and a device for detecting a state of charge of a battery assembly and a battery assembly charge and discharge control device.

More specifically, Kikuchi describes a variation of the charged amount among battery blocks comprising a battery assembly that is detected by subtracting the detected value of the variation from the difference between the upper limit value and the lower limit value of the charged amount. Thus, the moveable range of the charged amount may be found. The position of the present charged amount is detected as the state of charge. For example, if it is arranged that both ends of the movable range are 0% and 100%, and that the movable range is the full scale, then, the position of the charged amount on this scale is specified by the ratio %. The detection of the state of charge, in which the variation in charged amount and the change of the movable range are considered, is performed, and on the basis of this state of charge, a preferable charge, and discharge control is performed.

However, in contrast to certain embodiments of the present invention, Kikuchi does not disclose or suggest a state of charge value adoption means for adopting the apparent state-of-charge value if the capacity difference is at least a predetermined capacity difference that is stored beforehand.

Therefore, certain embodiments of the present invention address the aforementioned problems. Moreover, certain embodiments of the present invention provide a battery control apparatus, method, program, and system for a battery which are capable of controlling the pack with improved accuracy despite capacity differences (capacity variation).

The Applicant respectfully submits that Kikuchi does not provide any teaching that using a state-of-charge value adoption means for adopting the apparent state-of-charge value (if the capacity difference is at least a predetermined capacity difference that is stored beforehand) will provide a high precision charge discharge control apparatus that possesses the advantages of the use of a different state-of-charge value. Further, Kikuchi does not provide any proposition that

adopting an apparent state-of-charge value if the capacity difference is at least a predetermined capacity difference that is stored beforehand leads to a high precision charge discharge control method that possesses the advantages of the use of a different state-of-charge value. Therefore, certain embodiments of the present invention provide a method and an apparatus in which a state-of-charge value is a controlled object that is changed according to a variation of remaining capacities of unit batteries, which is neither taught by Kikuchi nor any of the other cited references.

Therefore, the Applicant respectfully submits that, for at least these reasons, claims 22, 30, and 38-39, and any of their dependent claims, are patentable over the cited references.
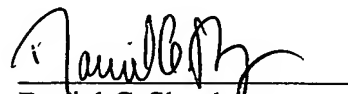
VII. Conclusion

In light of the above discussion, the Applicant respectfully submit that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance. The Examiner is invited to contact the undersigned at (202) 220-4420 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

Dated: January 24, 2008   By: _____
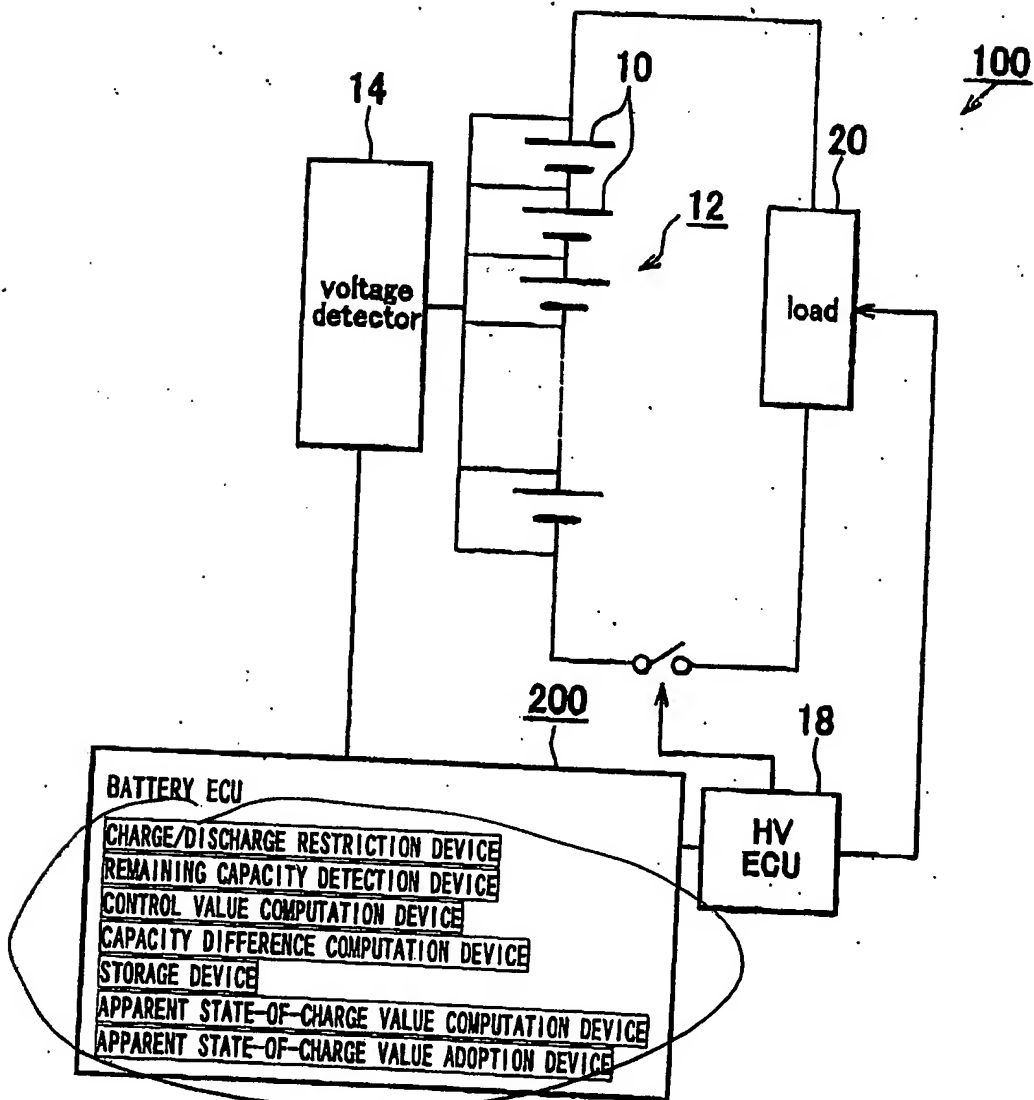   Daniel G. Shanley
                                      (Reg. No. 54,863)

KENYON & KENYON LLP
1500 K Street, N.W., Suite 700
Washington, D.C. 20005
Tel: (202) 220-4200
Fax: (202) 220-4201

APPENDIX

F I G . 1

14

10

100

12

20

voltage detector

load

200

18

BATTERY ECU

CHARGE/DISCHARGE RESTRICTION DEVICE

REMAINING CAPACITY DETECTION DEVICE

CONTROL VALUE COMPUTATION DEVICE

CAPACITY DIFFERENCE COMPUTATION DEVICE

STORAGE DEVICE

APPARENT STATE-OF-CHARGE VALUE COMPUTATION DEVICE

APPARENT STATE-OF-CHARGE VALUE ADOPTION DEVICE

HV ECU

✳ Elements Added ✳